Notice of Allowability	Application No.	Applicant(s)	
	09/592,813	Piro et al.	
	Examiner	Art Unit	
	Rafael Perez-Gutierrez	2686	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *Applicant's amendment filed on August 26, 2004*.

2. ☒ The allowed claim(s) is/are *1,3-15 and 17-20*.

3. ☒ The drawings filed on *26 August 2004* are accepted by the Examiner.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date *11182004* .
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

DETAILED ACTION

1. This Action is in response to Applicant's amendment filed on August 26, 2004. **Claims 1-20** are still pending in the present application.

EXAMINER'S AMENDMENT

2. An Examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to Applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this Examiner's amendment was given in a telephone interview with Alexander J. Smolenski, Jr. on November 17, 2004.

3. The application has been amended as follows:

Claims

a) **Claim 1** has been amended as follows:

1. (Currently Amended) A field effect transistor mixer comprising:

a) a balun that includes a transformer having a primary winding and a secondary winding, the primary winding coupled to a radio frequency signal input;

b) a pair of field effect transistors, each transistor having a gate, a source, a drain, and a channel between the source and the drain, wherein

i) the gates of the transistors are coupled to one another and to a local oscillator input,

ii) one of the source and the drain of a first of the two transistors is coupled at a node to one of the source and the drain of the other of the two transistors, and the node is coupled to ground,

iii) the other of the source and the drain of the first of the two transistors is coupled to one side of the secondary winding of the balun and the other of the source and the drain of the second of the two transistors is coupled to the other side of the secondary winding of the balun; and

c) an intermediate frequency signal output coupled to a point in the circuit path between the first and second transistors,

wherein, at the node, one of the source and the drain of the second of the two transistors is connected to ground, and the node is coupled to one of the source and drain of the first of the two transistors by a filter.

b) **Claim 2** have been canceled.

c) On **line 1** of **claim 3**, "claim 2" has been replaced with --claim 1--.

d) On **line 2** of **claim 14**, "the center tap" has been replaced with --a center tap--.

e) **Claim 15** has been amended as follows:

15. (Currently Amended) A field effect transistor mixer comprising:

a) a transformer having a primary winding and a secondary winding, the primary winding coupled to a radio frequency signal;

b) a pair of switches, comprising of a first switch and a second switch, wherein

i) the gates of the switches are coupled to one another and to a periodic signal input,

ii) the first switch is coupled at a node to ground, and the node is coupled to the second switch,

iii) one switch is attached to one side of the secondary winding of the transformer, and the other switch is attached to the other side of the secondary winding of the transformer; and

c) an intermediate frequency signal output coupled to a point in the circuit path between the first and second [transistors] switches,

wherein, at the node, one of the switches is connected to ground, and the node is coupled to the other switch by a filter.

f) **Claim 16** have been canceled.

g) On **line 1** of **claim 17**, "claim 16" has been replaced with --claim 15--.

Drawings

4. The formal drawings received on August 26, 2004 are accepted by the Examiner.

Allowable Subject Matter

5. **Claims 1, 3-15, and 17-20** are allowed and they were renumbered 1-6, 12-14, 17, 15, 16, 18, 7, 8, 11, 9, and 10, respectively.

6. The following is an Examiner's statement of reasons for allowance:

Consider **claim 1**, the best prior art found during the examination of the present application, **Poulin et al. (U.S. Patent # 6,278,872 B1)**, fails to specifically show, disclose, or suggest a field effect transistor (FET) mixer in which one of a source and a drain of a first of two FETs is coupled at a node to one of a source and a drain of the other of the two FET, the node is coupled to ground, and, at the node, one of the source and the drain of the second of the two FETs is connected to ground, and the node is coupled to one of the source and drain of the first of the two FETs by a filter.

Poulin et al. clearly show and disclose, in figure 3, a FET frequency converter that is similar in configuration to the claimed mixer in the present application, however, it lacks the claimed configuration of the node being coupled to one of the source and drain of the first of the two FETs by a filter and no suggestion or motivation for adding or connecting a filter as claimed in the present application is provided by Poulin et al., therefore, this limitation, in conjunction

with the other limitations recited in claim 1, is novel and unobvious in view of Poulin et al. and the prior art of record.

Consider **claim 8**, the best prior art found during the examination of the present application, **Poulin et al. (U.S. Patent # 6,278,872 B1)**, fails to specifically show, disclose, or suggest a method of mixing a periodic signal and a radio frequency (RF) signal producing an intermediate frequency (IF) signal in which the IF signal is outputted by filtering a mixed output between a first and a second switch.

Poulin et al. clearly show and disclose, in figure 3 and column 4 line 55 - column 5 line 44, a frequency converter that mixes a local oscillator (LO) signal with a RF signal to produce an IF signal, however, it lacks the claimed step of outputting the IF signal by filtering a mixed output of between a first and a second FET (switch) and no suggestion or motivation for filtering the mixed output as claimed in the present application is provided by Poulin et al., therefore, this limitation, in conjunction with the other limitations recited in claim 8, is novel and unobvious in view of Poulin et al. and the prior art of record.

Consider **claim 15**, the best prior art found during the examination of the present application, **Poulin et al. (U.S. Patent # 6,278,872 B1)**, fails to specifically show, disclose, or suggest a field effect transistor (FET) mixer in which a first switch is coupled at a node to ground, the node is coupled to a second switch, and, at the node, one of the switches is connected to ground, and the node is coupled to the other switch by a filter.

Poulin et al. clearly show and disclose, in figure 3, a FET frequency converter that is similar in configuration to the claimed mixer in the present application, however, it lacks the

claimed configuration of the node being coupled to one of two switches by a filter and no suggestion or motivation for adding or connecting a filter as claimed in the present application is provided by Poulin et al., therefore, this limitation, in conjunction with the other limitations recited in claim 15, is novel and unobvious in view of Poulin et al. and the prior art of record.

Any comments considered necessary by Applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance".

Conclusion

7. Any response to this Office Action should be **faxed to** (703) 872-9306 **or mailed to**:

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Hand-delivered responses should be brought to

220 S. 20th St.
Crystal Plaza Two, Lobby, Room 1B03
Arlington, VA 22202

8. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Rafael Perez-Gutierrez whose telephone number is (703) 308-

8996. The Examiner can normally be reached on Monday-Thursday from 6:30am to 5:00pm.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Marsha D. Banks-Harold can be reached on (703) 305-4379. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4700 or call customer service at (703) 306-0377.

Rafael Perez-Gutierrez
R.P.G./rpg RAFAEL PEREZ-GUTIERREZ
PATENT EXAMINER
November 18, 2004